

Observations on Nesting by a Fence Lizard, *Sceloporus undulatus hyacinthinus*, in Virginia

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The northern fence lizard (*Sceloporus undulatus hyacinthinus*) is common and widespread in Virginia (Mitchell, 1994). However, few observations of nesting by this species have been made in the state. Apparently the only published report of natural nesting in Virginia is that of de Rageot (1964), who observed a female lay three eggs on 5 June in a small burrow that she had excavated at the base of an oak tree in Surry County; this lizard laid seven more eggs in captivity. Mitchell (1994) reported that egg laying by captive females from Virginia occurred between 23 June and 9 July; 23 clutches contained 6-13 eggs. Palmer and Braswell (1995) reported nesting as early as 12 May in North Carolina, with clutch sizes of 3-16. Nesting habitats and substrates documented in that state include old sawdust piles, old stumps, sandy red clay, coarse sand, road banks and open fields; nest cavity depths ranged from 5-15 cm (Brown, 1992; Palmer & Braswell, 1995). Martof et al. (1980) stated that females in the region may produce a second clutch in an extended season; they also mentioned nesting in burrows under rotten logs. Oviposition usually occurs in May and June in West Virginia (Green & Pauley, 1987). Missouri females lay their first clutches in late May and early June, with second clutches being produced in July (Johnson, 1987).

At 1420 h on 2 May 1997, we encountered a female fence lizard engaged in nesting behavior along FS 609 in the George Washington & Jefferson National Forest, several hundred meters off Co. Rt. 616 in Alleghany County, Virginia. We made the following observations during the next 95 min. A cool, light rain was falling during this entire period, with a brief span of heavier rain near the beginning; ambient temperature was approximately 15-17°C. In an attempt to minimize disturbance, we did not capture the lizard or excavate the nest cavity, although several photographs (without flash) were obtained during the latter portion of the observation period.

The nest cavity was dug in a shaley roadbank, about 1.5 m above the level of the dirt road; it was approximately 5 cm high, 10 cm wide and at least 15 cm deep

(Fig. 1). A partial excavation about 1 m lower on the roadbank apparently had been abandoned earlier. While laying eggs, the lizard's tail was pressed up against the rear of the cavity, its chin was down and the back arched; the body undulated from side to side as each egg was laid. Although an accurate count of the number of eggs laid was not made, we estimated a clutch size of 8-10.

Several times during the nesting process, an unidentified muscoid fly (probably Muscidae or Sarcophagidae) landed near the lizard, prompting it to gape and make several unsuccessful capture attempts. At 1454 h the fly landed beside the lizard again and entered the nest cavity, never to emerge. The lizard ate several small ants that passed by the cavity entrance during our observation period.

Oviposition was completed at or shortly before 1505 h, at which time the lizard emerged from the nest cavity and began filling it with shale fragments. While facing toward the road, she used her front legs to pull the fragments up toward the nest (Fig. 2), and then turned 180 degrees to push them into the cavity with her snout and forelegs (Fig. 3). She continued in this manner for 10 min, adding a single upward sweep with the right hind leg while facing the nest. This was followed by an 8 min rest period, then 10+ min of additional filling, using the same behavior including a single hind leg sweep. The fly was buried during the first filling bout. The lizard continued her nest-filling behavior, interspersed with periods of rest, until our departure at 1555 h. By this time the cavity was approximately 90% covered.

Our observations indicate that some fence lizards in Virginia lay their eggs much earlier than reported by Mitchell (1994). In contrast to the female that we observed, which did not initiate nest-filling behavior until her entire clutch had been laid, Johnson (1987) reported that the 15 eggs he excavated from a Missouri nest were deposited in five layers containing three eggs each, with each layer covered by a small amount of dirt. His observations imply that the female partially filled her nest after each group of three eggs was laid.



Fig. 1. Female fence lizard at entrance of nest cavity; one egg is visible to her left.



Fig. 2. Female fence lizard using left foreleg to pull shale fragments up toward nest cavity.



Fig. 3. Female fence lizard using right fore leg to push shale fragments into nest cavity.

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Shorter Contributions

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AN INLAND RECORD FOR THE TIGER BEETLE *CICINDELA TRIFASCIATA ASCENDENS* IN VIRGINIA. – The tiger beetle *Cicindela trifasciata ascendens* LeConte has been recorded infrequently from Virginia. Most Virginia specimens have been found in coastal areas in association with mud flats, small wet depressions in dune habitats, or tidal marshes. This species, although suspected to breed at one or more sites, has not been verified to breed in the state. Knisley & Schultz (1997) show only one record outside of the Coastal Plain in Virginia. The species occurs at other inland sites in Texas, Arkansas, Oklahoma, Kansas, Tennessee, Mississippi, Louisiana, South Carolina, North Carolina, and Georgia (Knisley & Schultz, 1997; Pearson et al., 1997).

In 1997, the Virginia Department of Conservation and Recreation, Division of Natural Heritage began a multi-disciplinary inventory of John H. Kerr Reservoir and Dam, and associated properties in the southern Piedmont physiographic province of Virginia (Mecklenburg, Halifax, and Charlotte counties). These lands are owned and managed by the U. S. Army Corps of Engineers (USACOE). As part of this inventory, tiger beetles (Cicindelidae) were targeted for surveys.

Several species of tiger beetles were captured during 1997 surveys, including *Cicindela punctulata* Olivier, *C. repanda* Dejean, *C. rufiventris* Dejean, and *C. sexguttata*

Fabricius. Also, *Cicindela splendida* Hentz, a rare species in Virginia (Roble, 1996), was found by Dr. Steven M. Roble in a powerline just north of the Difficult Creek drainage and outside of USACOE property in Halifax County (new county record). Perhaps the most interesting discovery during these surveys was *Cicindela trifasciata ascendens*. Two individuals were documented at one site on two dates (17 June, 1 July) in 1997. Knisley & Schultz (1997) show this site as the only inland record for *C. t. ascendens* in Virginia, but do not provide details on the collection site or circumstances leading to this discovery. Additional information on the capture of *C. t. ascendens* at Kerr Reservoir is provided herein.

Both individuals of *C. t. ascendens* were found in open habitat consisting of a disturbed powerline right-of-way crossing Butcher Creek adjacent to County Route 688. Apparently, this area has been used as a primitive boat launch in the past, which in conjunction with fluctuating water levels and right-of-way maintenance, has contributed to the openness of the ground adjacent to Butcher Creek where the specimens were captured.

The water levels at Kerr Reservoir fluctuate greatly over the course of a year, and during low levels there are extensive mud flats at many sites. The changing water levels at the capture site for *C. t. ascendens* essentially mimic those seen in tidal marshes where this species has been found previously in Virginia. Although the cycle of high and low water levels at Kerr Reservoir is typically not seen during the course of a single day as it would be in tidal situations, the habitat conditions occurring between the high and low water marks are similar to those seen in coastal estuarine systems. Knisley & Schultz